CALFED Ecosystem Science and Monitoring Program
FY 2000 IMPLEMENTATION

Program Background

Since its inception, CALFED has worked to incorporate scientific information and expertise into its ecosystem restoration decision-making process [e.g. Vol. II, the 1997 Science Panel, the Strategic Plan, & the most recent Interim Science Panel]. One of the primary objectives of the CALFED Program is to improve the aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species. There is increasing recognition that an immediate and significant effort is needed to ensure that implementation of the long-term Ecosystem Restoration Program be supported by a strong scientific base. As part of the Comprehensive Monitoring, Assessment, and Research Program (CMARP), the CALFED Ecosystem Science and Monitoring Program is being structured to include funding to support the science and monitoring activities necessary to implement ERP's adaptive management restoration framework. This program is an integral component of CALFED's overall CMARP and will provide the framework for CMARP actions to provide scientific information for other CALFED program elements.

During FY2000, the CALFED Ecosystem Science and Monitoring program will initiate the implementation of a comprehensive science and monitoring program, based on the recommendations of CMARP.

FY 2000 Funding Priorities

Staff recommendation is to allocate $7.4 million among seven program tasks:

- Scientific review and revision to CALFED's Strategic Plan and Implementation Plan ($2.25 million)
- Peer review of proposals, projects, monitoring plans and project data ($1.25 million)
- Access to and visualization of scientific information ($0.65 million)
- Ecosystem Science Conference and other workshops ($0.25 million)
- Data management ($1.0 million)
- Supplemental monitoring of existing projects ($1.50 million)
- Region-wide scientific work - compiling existing information and supplementing with additional monitoring as needed ($0.5 million)

The following sections describe each of the tasks, including a description of stakeholder and public input, proposed methods for distributing the funding, and time lines.

E-038453

Task 1. Scientific Review and Revision to Strategic Plan and Implementation Plan ($2.25million -A minimum of $0.55 million for focused research)

This task includes annual review and revision to the Strategic Plan and Implementation Plan, with the goals of providing scientific support for an ecosystem based adaptive management approach to selection of restoration priorities and collecting the information needed to evaluate the effectiveness of the Implementation Plan. This will involve a review of the CALFED implementation process with a focus on adaptive management and an ecosystem-based approach. Recommendations will be developed for the incorporation of scientific and focused research. Subtasks include:

- Complete draft ERP white papers and reconnaissance-level studies, with accelerated implementation of their findings. The CALFED ERP Science Board will consider results of the initial white papers in preparing their recommendations for FY 2001 implementation and will identify additional white paper needs. As appropriate, recommendations and findings from these efforts will be considered for early implementation.

- Develop recommendations for monitoring indicators and protocols that will be considered for inclusion in the baseline monitoring program being developed by CMARP, for future project solicitations, and other CALFED monitoring and adaptive management activities.

- Identify comprehensive restoration priorities and include these priorities in the long term restoration strategy.

- Consider recommendations for adaptive management experiments for implementation in Stage I.

- Develop a focused ERP research proposal solicitation process, based on a process described in the May 1999 CMARP report. CALFED staff, in concert with the CALFED ERP Science Board and supporting academic, agency, and stakeholder scientists who are familiar with the Bay-Delta ecosystem and the CALFED Program will identify and establish priorities for research needs.

- Develop and conduct prefeasibility studies on demonstration streams to help develop the adaptive management framework for implementation of specific projects on these streams.

Stakeholder and Public Input

As part of the CMARP, one of the primary tasks identified was the development of a CALFED Focused Research Program. The actions listed above will allow CALFED to focus in on more detailed research. As the additional monitoring elements, restoration priorities, adaptive management experiments and studies on demonstration streams are

identified, mechanisms will be set up to complete the additional work involving CMARP participants, Interagency Ecological Program (IEP) work teams, additional agency and academic researchers, and consultants .

CALFED has developed the CALFED ERP Science Board. This board includes members of the original Core Team and the 1997 ERP Science Panel who assisted in the development of the CALFED ERP Strategic Plan, and additional scientific experts to adequately address scientific disciplines represented in the ERP. The Science Board will develop recommendations for FY 2001 implementation, monitoring protocols and indicators, restoration priorities, adaptive management experiments and additional research needs based on existing information, current project status, and information provided by supporting academic, agency, and stakeholder scientists who are familiar with the Bay-Delta ecosystem and the CALFED Program.

CALFED staff, the CALFED ERP Science Board and supporting academic, agency, and stakeholder scientists will identify and establish priorities for research needs contained in the Strategic Plan, the CMARP appendices, the ERP white papers, the restoration PSP process and elsewhere. CALFED will develop a list of pressing research issues and questions to address in FY2000 and FY2001. Using a priority list of these questions, CALFED will employ the RFP process described in the CMARP report and use as many of the peer reviewers identified above as possible.

Once the Science Board has developed their recommendations, those recommendations will be discussed and reviewed at public and scientific workshops. The recommendations which result in specific directed actions, or that will be included in the FY 2001 Proposal Solicitation Package, will then go through the established approval process: presentation for recommendations from the Ecosystem Round Table, the Bay-Delta Advisory Council (BDAC) and the CALFED Policy Group, with final approval by the Secretary of the Interior or the Secretary for Resources.

In order to obtain the most up to date information on current projects, CALFED will convene an annual Ecosystem Science Conference. Project status and research information will be presented and this information will contribute to the Science Panel's recommendations for FY 2001 and future years.

Proposed Method for Distributing Funding

The Science Board and additional scientific expert staff will be funded through a directed action, with contracts being developed between CALFED and the Science Board members and other staff scientists. Once FY 2001 recommendations have been approved, proposals for implementation of the recommendations will occur in three ways:

- Directed Action
- Proposal Solicitation or RFP process, based on the identified priorities
- Funding of Future Phases for Existing Projects which have completed their first phase and the results merit funding the next phase.

Once approved, contracts will be completed and administered through the State (Resources Agency) and Federal (U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Army Corps of Engineers, and Natural Resource Conservation Service) contracting agencies.

Time Line

The initial white paper process is ongoing and will be completed in January 2000, with workshops conducted and papers published by February 1, 2000. Additional recommendations developed by the Science Panel will be presented to the Ecosystem Round Table, BDAC, and the CALFED Policy Group in February and early March 2000. Implementation of the FY 2001 priorities and other Science Panel recommended actions will commence as soon as approval has been obtained.

Task 2. Peer Review of Proposals, Projects, Monitoring Plans and Project Data. ($1.25 million)

Independent, external peer review of science related proposals and actions is essential for a successful CALFED restoration program. This objective scientific and technical review process will be used for a variety of CALFED activities, including annual implementation plans, submitted proposals, project monitoring plans, research and monitoring elements, project data, and quarterly and annual report information, adaptive management experiments and the restoration priorities themselves.

This peer review process, which will be carried out by independent reviewers under contract, involves work at two levels:

- Project-specific scientific review would focus on whether the project is of importance from an ecosystem-based perspective, and the degree to which it might inform our understanding of the ecosystem and its workings (e.g.: its information richness).

Important questions addressed by this external peer review process will include:

- Is the project important from an ecosystem-based perspective?
- Will the project add to our understanding of the ecosystem and its workings?
- Is this the best project for this type of intervention?
- Is a project of high priority for a particular ecological process or unit?
- Have the relevant questions or hypotheses been identified for which this project is to provide answers?

- Context review would consider region-wide importance, "This project looks good, but is it in the best place for this type of intervention? Is this kind of project of high-priority for this process or ecological unit?".

Recommendations for monitoring indicators and elements developed through project monitoring review will be considered for inclusion in baseline monitoring (through CMARP, IEP, or expansion of other existing monitoring programs), future project solicitations, and other CALFED monitoring programs.

Stakeholder and Public Input

In order to provide a high level of scientific input into the adaptive management process, academic, agency and stakeholder scientists who are familiar with the Bay-Delta Ecosystem and the CALFED process will provide scientific review of Annual Implementation Plans, submitted proposals, project monitoring plans, project data, and quarterly and annual report information. Review and recommendations for changes to the Implementation Plan will be based on the restoration actions, and on monitoring protocols and indicators identified during the process of scientific review and revision to the CALFED Strategic Plan and Implementation Plan as previously described. Information presented at the annual Ecosystem Science Conference will also be included in the review process. The Science Board will review the recommended actions and provide recommendations for revising the Implementation Plan. The results of the Science Board deliberations will be presented at a public workshop prior to presentation to the Ecosystem Round Table. These recommendations will then go through the established approval process: presentation for recommendations from the Ecosystem Round Table, the Bay-Delta Advisory Council (BDAC) and the CALFED Policy Group, with final approval by Secretary of the Interior or Secretary for Resources.

Proposed Method for Distributing Funding

CALFED has developed the CALFED ERP Science Board. This board includes members of the original Core Team and the 1997 ERP Science Panel who assisted in the development of the CALFED ERP Strategic Plan, and additional scientific experts to adequately address scientific disciplines represented in the ERP. The Science Board will develop recommendations for FY 2001 implementation, monitoring protocols and indicators, restoration priorities, adaptive management experiments and additional research needs based on existing information, current project status, and information provided by supporting academic, agency, and stakeholder scientists who are familiar with the Bay-Delta ecosystem and the CALFED Program.

The Science Board and additional scientific expert staff will be funded through a directed action, with contracts being developed between CALFED and the Science Board members and other staff scientists to be administered through the USBR.

Time Line

CALFED Staff recommends initiating the work as soon as the funding is approved. This is expected to be a 12 month effort and will be ongoing as new peer review tasks are identified. Review of annual implementation plans, project data, quarterly and annual reports will begin as soon as possible, resulting in specific recommendations in January and

February 2000, including recommendations for the FY 2001 priorities, actions, monitoring protocols and indicators. Once specific recommendations have been approved, review of the proposals and associated monitoring plans received through the proposal solicitation process will begin as proposals are received and throughout project selection from March through September. Recommendations for projects, additional monitoring needs, and revisions to the Implementation Plan based on data review will be completed by August 2000. Once the Science Board develops recommendations the information will be presented at a public work shop in late August/early September 2000. Final approval of the recommended actions and projects will be complete by October 1, 2000.

Task 3. Access to and visualization of scientific information. ($0.65 million)

This task would focus on the better use and dissemination of existing scientific information. The goal is to make this information and supporting data more readily available to scientists and managers. Subtasks would include:

- Convert key scientific reports and data into digital form. This task will involve IEP, CERES, SFEI and others to improve digital library services to decision makers in the CALFED community; giving better access to maps, journal articles, and reports essential to the consideration and incorporation of scientific information.

- Improved presentation and visualization of the CALFED ecosystem and land-use data by use of GIS and other similar technology for data projection and visualization by region. This powerful tool will allow CALFED to access, analyze, and map environmental, demographic, economic and other data sets. The information will be used in briefings, workshops for science panels and project review teams, and for public presentations. The focus would be on use of the web for communication of scientific information.

- Initiate development of project-specific web pages for all currently funded projects. These web sites will provide general project information, summary results and fiscal information. The web sites will also provide links to other relevant web sites such as TERA and to raw data through the centralized data management system being developed under Task 5.

- Expand and further develop regional quarterly reporting and comprehensive annual reporting of project results.

Stakeholder and Public Input

The information developed and presented through web sites will be available for public review. Overall project information will be provided on the CALFED web page, with links to the other web pages as they are being developed. Stakeholders, agency, academic and consultant scientists and the public will have access to all of the CALFED data and will be encouraged to provide CALFED with comments and recommendations at workshops, public meetings, or in writing. CALFED will also provide a central contact to receive comments on the data, web page information needs, and recommendations.

Proposed Method for Distributing Funding

CALFED Staff proposes to distribute the FY 2000 funds through directed contracts administered through the USBR for the development of digital data, GIS capabilities and web site access. Approximately $50,000 in FY 2000 funds will be distributed through an existing contract with the University of California, Davis for GIS mapping of project sites.

Time Line

CALFED Staff recommends initiating the work as soon as the funding is approved. This is expected to be a 12 month effort and will be ongoing as new restoration projects come on line.

Task 4. Ecosystem Science Conference and other Workshops ($0.25 million)

CALFED needs to develop a formalized mechanism for sharing of scientific information with peer review scientists, the public, and CALFED decision makers. CALFED will cosponsor an annual CALFED Science Conference scheduled for October 3-5, 2000 in Sacramento. The first of what will be annual or biennial conferences is being planned by a steering committee of CALFED, agency, stakeholder, and university representatives. The conference will be held to share information and determine science and monitoring needs for subsequent years. This funding would also contribute to regional interactive workshops which allow information sharing with local communities and governments.

Stakeholder and Public Input

The annual Ecosystem Science Conference is designed to present and exchange science information and foster open discussion about the CALFED Ecosystem Restoration Program progress. The first conference is being planned by a steering committee of CALFED, agency, stakeholder, and university representatives. The first conference will highlight the progress over the past three years, with subsequent conferences focusing on new information and how that information will be used to implement recommended changes to the Annual Implementation Plan.

This will be a science conference with scientists as the target audience. There could be additional public outreach through a poster session or short public session prior to the presentations of scientific information. CALFED and stakeholder managers could attend and benefit from the proceedings. The conference will run for three days and include both plenary and concurrent sessions. Speakers will not be restricted to those scientists receiving CALFED funds, but would be limited to scientists conducting research that addresses CALFED issues.

Proposed Method for Distributing Funding

CALFED Staff proposes to distribute FY 2000 funds through a directed contract with Department of Water Resources for CMARP staff to work with the steering committee to plan and implement the Ecosystem Science Conference. The contract will be administered through the USBR. Additional directed contracts with other vendors for conference facilities and services will be developed as needed and will be administered through the USBR.

Time Line

Planning for the first CALFED Science Conference began in October 1999 and the conference is scheduled for October 3-5, 2000. Conference abstracts will be provided by the speakers at least two weeks before the conference.

Task 5. Data management. ($1.0 million)

The focus would be on the creation of a central data storehouse, further evaluation of CALFED data, and defining data development needs for local projects including monitoring and other data associated with CALFED restoration and research. This effort builds on the Bay/Delta and Tributaries Database, increasing its capabilities and adapting to meet the needs of CALFED. This database currently houses the Interagency Ecological Program, CVPIA/Comprehensive Assessment and Monitoring Program (CAMP) and Sacramento Watershed Study data.

CALFED will adapt the existing data base management system developed for Bay-Delta data called Bay/Delta and Tributaries Database and Browser System. This system was approved by several agencies and stakeholders and completed through a cooperative effort between DWR and CUWA. This system has also been modified for use with CVPIA data. Advantages of this database are:

- Historic Delta data are in the system
- Historic Delta data have had a quality control check
- This system has promise of long term access
- Well developed station identification system that is expandable to geographic scope of CALFED
- Since this system is already established, saves potentially millions of dollars needed for development of the system, infrastructure, and software.
- Accommodate tide
- Good interface with other data bases that are commonly used with Delta data.

Stakeholder and Public Input

There is considerable start-up cost savings, since many of the data base parameters are already developed and a system for incorporating new projects is in place. The advantages of adapting this system instead of developing a new system or adapting another system which would necessitate considerable initial investment of both time and money far

outweigh the potential disadvantages. These disadvantages will be eliminated as we adapt this system for CALFED. Additionally, University and public involvement will be included on a regional basis. CALFED will encourage local database management entities to help set up and manage the database systems within each region. These regional entities would send information into the main database system located in Sacramento.

The list of projects for initial implementation of the data management system will be refined based on the types of data being collected and by prioritizing projects which are collecting large amounts of data which are crucial for scientific review in identifying focused research and research data gaps. Notification will be provided to all projects which will be included in the data management system which will inform them that the system is being developed, data will be entered into an access database, and the data centralized in one main area for use by CALFED and available to the public. Accessibility to data will be improved through efforts undertaken in Task 3.

Proposed Method for Distributing Funding

The projected cost for first year funding is $1,000,000 to implement many current projects [200 projects at an average cost of $5,000 to set up and manage the database for each project] CALFED Staff proposes to distribute the FY 2000 funds through a contract with DWR's Environmental Services Office for setting up and managing the database.

Time Line

CALFED Staff recommends initiating the work in January 2000. This is expected to be a 12 month effort and will be ongoing to eventually include all existing ecosystem restoration projects and as new restoration projects come on line.

Task 6. Supplemental monitoring of existing projects. ($1.5 million)

Most proposals contain some data collection and monitoring as part of the project proposal. In many instances the proponents are not equipped to perform the necessary pre-project monitoring and long-term ecosystem monitoring, or the monitoring is not adequate to address the scientific uncertainties associated with the project. Once specific monitoring protocols have been developed through the White Paper process and scientific review of existing monitoring efforts, supplemental monitoring recommendations will be developed as needed. This task would include the implementation of standardized monitoring protocols based on project type. Initiation of regional monitoring would also be included under this task. Regional monitoring will include a compilation of existing regional monitoring programs, determination of information gaps which exist, and recommendations for monitoring programs designed to fill in the gaps.

Stakeholder and Public Input

The Science Board will develop recommendations for FY 2001 implementation, monitoring protocols and indicators, restoration priorities, adaptive management experiments and additional research needs based on existing information, current project status, and information provided by supporting academic, agency, and stakeholder scientists who are familiar with the Bay-Delta ecosystem and the CALFED Program. All of the monitoring for existing ecosystem restoration projects will be reviewed and determinations of additional monitoring needs will be identified for certain projects. Once additional monitoring needs are identified, supplemental monitoring could either be solicited through a project monitoring solicitation, developed as a directed action if a particular agency, public or private entity is identified as the best implementation entity, or by supplementing funding for the original project proponent if the proponent could complete the additional work. As the additional monitoring elements, experiments and studies are identified, mechanisms will be set up to complete the additional work involving CMARP participants, Interagency Ecological Program (IEP) work teams, additional agency and academic researchers, and consultants.

Proposed Method for Distributing Funding

The Science Board and additional scientific expert staff will be funded through a directed action, with contracts being developed between CALFED and the Science Board members and other staff scientists. Once FY 2001 recommendations have been approved, proposals for implementation of the recommendations will occur in three ways:

- Directed Action
- Proposal Solicitation based on additional monitoring needs
- Supplemental Funding of existing Projects

Although additional project monitoring approval occurs through three different mechanisms, once approved contracts will be completed and administered through the State (Resources Agency) and Federal (U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Army Corps of Engineers, and Natural Resource Conservation Service) contracting agencies.

Time Line

Review of current project monitoring efforts will begin as soon as the funding is approved. Contracts or contract amendments will be completed once supplemental monitoring needs have been identified and approved as a priority to obtain the scientific information needed to modify the program in an adaptive management framework. Supplemental monitoring activities will be ongoing, as new information warrants.

Task 7. Region-wide scientific work. ($0.5 million)

This involves further development of landscape-level and process-oriented conceptual models as recommended by the Strategic Plan; and further specification of the Ecological Units defined in Vol. II.

Stakeholder and Public Input

In order to provide a high level of scientific input into the adaptive management process, academic, agency and stakeholder scientists who are familiar with the Bay-Delta Ecosystem and the CALFED process will provide scientific review, including a review of the scientific uncertainties and landscape-level and process-oriented conceptual models. Review and recommendations for changes to the Implementation Plan will be based on the restoration actions, and monitoring protocols and indicators identified during the process of scientific review and revision to the CALFED Strategic Plan and Implementation Plan as previously described. Information developed during the annual Ecosystem Science Conference will also be included in the review process. The Science Board will review the recommended actions and provide recommendations for revising the Implementation Plan. The results of the Science Board deliberations will be presented at a public workshop prior to presentation to the Ecosystem Round Table. These recommendations will then go through the established approval process: presentation for recommendations from the Ecosystem Round Table, the Bay-Delta Advisory Council (BDAC) and the CALFED Policy Group, with final approval by Secretary of the Interior or Secretary for Resources.

As the additional regional monitoring elements, experiments and studies are identified, mechanisms will be set up to complete the additional work involving CMARP participants, Interagency Ecological Program (IEP) work teams, additional agency and academic researchers, and consultants.

Proposed Method for Distributing Funding

CALFED Staff proposes to distribute the FY 2000 funds through directed contracts with appropriate agency staff or consultants administered through the USBR.

Time Line

Review and recommendations for changes to the Strategic Plan will be based on the restoration actions and monitoring protocols and indicators identified during the process of scientific review and revision to the CALFED Strategic Plan as previously described in task 1, which will be completed in February 2000. The review process will include recommendations for landscape and conceptual models to be developed. Upon approval through the established process in February/March of 2000 development of the modeling work will begin. Initial model development will occur during the following 12 months and will be an ongoing effort as additional conceptual modeling needs are identified.